

CENTRAL INTELLIGENCE AGENCY
INFORMATION REPORT

REPORT

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CONCLUSION

SECRET

DATE DISCL 20 May 1954

SUBJECT

Hyperbolic Navigation Development at MIT **Parishart NO. OF PAGES** **4**

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NO. OF ENCLS. 618764
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1. In late September 1951 the East German Ministry for Post and Telecommunications ordered [redacted] to open up to start development of a hyperbolic navigation system. This project was given plan number V2-02 and was to be completed in 1952. Chief Engineer Erich Huettmann, under the overall supervision of Development Chief Bernhard Vinzelberg, was put in charge of the project. The 1952 form sheet of the Economic Plan characterizes the project as a "key word" (Kennwort) "Hyperbelnavigationssystem" as a "key word" which is scheduled to permit position finding for a ship over long distances. The frequency range is from 90 to 100 MHz. The system consists of a transmitter and a receiver. The transmitter consists of a construction element and a power transformer, throttled by a variable capacitor. The receiver consists of a construction element and a power transformer, throttled by a variable capacitor. 6,000 DME was provided for on the system. Development was to be completed by the fourth quarter 1954.

2. During 1952 major difficulties arose in trying to carry out the project. The work was mainly confined to the study of available literature. The technicians of Funkwerk Koepenick did not obtain the expected support of the Main Administration for Wireless Telecommunications (HV Funk) in the procurement of material; direction of the development was changed several times. At the end of 1952 the project was reviewed and put under the overall supervision of Wilhelm Grimm, with Guenther Hintze as the responsible director of the project. The form sheet for the 1953 Economic Plan gives the following data:

Theme: Long-distance navigation or position finding

Key word: Weitnavigationsverfahren

Technical characteristics: Instruments are to be used which permit ships and aircraft to determine their positions over distances

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Co-ordination:

Provisional co-ordination with the Ministry for Post and Telecommunications. Necessity of project has been confirmed.

Finance Source:

Central Research and Development Funds.

Costs:

Total costs amount to 450,000 DME, including the 1952 share of 50,000 DME. In 1953 a total of 156,000 DME is to be spent (material costs: 17,300 DME; fabrication costs: 26,600 DME; special costs such as [redacted] : 7,100 DME; purchase of [redacted] : 35,000 DME).

Completion Date:

Deferred to fourth quarter 1955.

1953 work schedule:

Preparatory work and laboratory development. The Technical-Scientific Navigation accompanying the 1953 [redacted] is: [redacted] investigation [redacted] is [redacted] obtain [redacted] increasing [redacted] use for navigation of [redacted] all [redacted] Introduction of the [redacted] in [redacted] many is necessary to [redacted] catch up with foreign nations".

3. During 1953 the project met with new difficulties. It was changed from a development project to a research project. Progress made from January through 30 August 1953 is given in the following extracts of monthly progress reports of Department TEE of Funkwerk Koepenick:

a. January 1953

Regert (fnu), who had been in charge of the project, left the firm at the end of 1952. His work was not particularly successful. Some ideas which were advanced had to be abandoned because it was impossible to attain the required accuracy of location (Ortungsgenauigkeit) by circumventing DECCA patents with the aid of a frame direction finder (Rahmenrichtungsfinder).

ped in such a way that measurement of the existing DECCA chains would be possible. It was determined whether this could be done. In mid-January, a conference was to take place with Dr. Vinzelberg, Jung, Dr. Schuettloeffel, Haeftze and Grimm in order to work out the position of Funkwerk Koenigsk in the Main Administration for Wireless Telecommunications.

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↓ This was to permit small craft having no special equipment other than a regular communications radio receiver to find their position.

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The status did not change, since no technician in charge (Sachbearbeiter) was available. The conference which was to establish Funkwerk Koepenick's position (see above) did not take place.

After a conference with the Hydrographic Service (Seehydrographischer Dienst) it was decided to start development of a receiver instrument without taking into consideration existing East German transmitters. This would make it possible to become acquainted with the problems under study and to obtain practical experience. Thus, a functional reconstruction (~~functional reconstruction~~ (funktionsmässiger Nachbau) of the receiver elements of the DBCCA systems in existence was to be attempted. The switching diagram (Schaltbild) was to be reconstructed in accordance with the functioning.

Funkwerk Koepenick requested the Main Administration for Wireless Communications to turn over all available material on the DECCA chain. The principle of the way in which an accurate position-finding procedure (Feinortung) works has in the meantime been cleared up to such an extent that Funkwerk Koepenick can consider proceeding with the construction of the wiring (Schaltungsmaessiger Aufbau). However, the principle of the procedure for rough position-finding (Grobortung) had not been cleared up. It was planned to carry out measurements bearing on the DECCA chain.

[redacted] Lambrecht (fnu) agreed to study the decometer problem. Department TEE made available to Lambrecht [redacted]

which are known. Funkwerk Koe
the very near future; however, i
the exact frequencies have been

Hintze, who was in charge of hyperbolic navigation, was on leave. A detailed report was to be made during August 1953. The intermediate frequency amplifier had been built. The receiver for the master transmitter (Muttersender) was being made. [redacted] the amplifying part (Verstärkerteil) had been completed. Work was concentrated on the discrimination [redacted] would then permit Funkwerk Koepenick to carry out accurate measurements.

test rather than as a development project. The Technical Projecting element was to forward an application for this purpose. The Second In-charge of the project was still engaged in the study of frequency multi-
plication (Frequenzvervielfachung) for accurate position finding. In the
interim, the question concerning the indication decimeter

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f. 30 August 1953

The development project for hyperbolic navigation extended into 1954. The provisory initial report had to be changed. The development proposition contained in it was to be put forth as a research proposition for next year. Work was progressing on the sub-order on the development of decompeters issued to ZIEG. Some types of rotating indicators (Drehmelder) had been investigated for their usability. The degree of accuracy attained was about 20 percent. This value appeared to be usable. However, the great power demand (Leistungsbedarf) of about 10 watts for each of the two deviation coils (Ablenkspulen) of the system continued to be very disadvantageous. Grimm advanced the proposition that possibly finding a less extensive and umfangreicher Aufbau der Dekompeters.

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Comment. As received. Probably Drehstrom (three-phase alternating current) was meant.

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